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Descriptions of new genera and species of DRYOPIDAE (Coleoptera).
By HOWARD E. HINTON . . . . . pp. 415–434, pl. 1

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DESCRIPTIONS OF NEW GENERA AND SPECIES OF DRYOPIDAE (COLEOPTERA)

By Howard E. Hinton.

(*Zoological Laboratory, Cambridge.*)

[Read 4th March, 1936.]

With Plate 1 and Forty-three Text-Figures.

In the present paper two genera and ten species are described as new, and several North American species which have been masquerading for many years under various genera are now referred to certain little-known North American and Old World genera.

The material described as new is part of a large collection from Costa Rica kindly sent to me by Mr. F. Nevermann; part of a collection received for determination from the Imperial Institute of Entomology through Mr. G. E. Bryant; a portion of the material which has remained undetermined until now in the collection of the British Museum (Natural History) and, finally, much of it is material collected by myself in the summers of 1933 and 1934 in central Mexico.

All figures were drawn by myself with the aid of camera-lucida and a projecting apparatus. Unless otherwise indicated the whole of each line next to each figure refers to a length of 0·2 mm. In describing the species magnifications of × 72 and × 144 were used. The length of the prothorax is always measured along the median line, from the base in front of the scutellum to the anterior margin; and the breadth is measured at the broadest point whether it be near the apex or near the base.

I wish to express my appreciation to Dr. K. G. Blair and Dr. A. D. Imms for their numerous and valuable suggestions made during the preparation of this paper.

Dryopinae

Helichus confusus sp. n.

(Figs. 3, 4.)

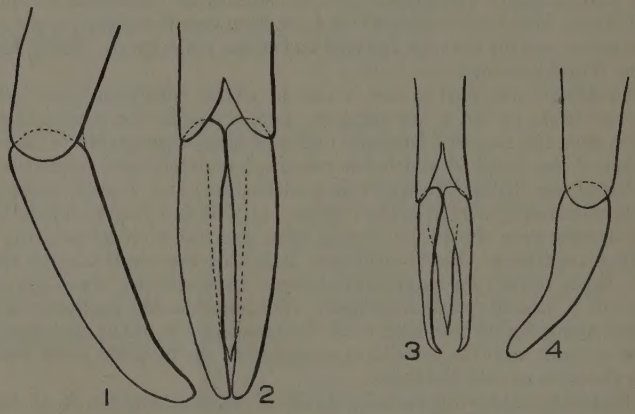
Moderately elongate, subparallel, robust; moderately densely clothed above with short, recumbent, dark brown to blackish hairs. Derm black, shining; antennae somewhat rufo-testaceous, mouth-parts and tarsi rufo-piceous. *Head* moderately finely, densely, irregularly, rugosely punctate, with fine granules moderately densely intermixed; clypeus more finely, less rugosely punctate and with the granules denser. *Prothorax* four-fifths as long as wide; pronotum evenly convex anteriorly but on basal one-third moderately strongly declivous to base and with a wide, shallow, hardly noticeable impression on each side on basal one-fourth. Surface with the sides finely, moderately sparsely granulate; disk with coarse, dense, and fine, sparse punctures intermixed, with the coarse punctures separated at middle of disk by about or slightly more than their own diameters and towards sides and base denser and coarser. *Elytral disk* with the striae shallowly impressed, coarsely but irregularly punctate; intervals flat, finely, moderately densely punctate; scutellum in the form of an equilateral triangle with the angles rounded and the base feebly arcuate. *Beneath* finely, moderately densely granulate and clothed throughout with short,

dense, recumbent hairs. Apical ventral abdominal segment much less densely pubescent than penultimate. Male genitalia (figs. 3, 4) short, with the parameres feebly curved ventrally and not broadened at apex; median lobes slender and sharply pointed. Length, 6 mm.; breadth, 2·9 mm.

Type: A male in my collection. MEXICO: Dist. de Temascaltepec, Rio Verde, alt. about 8,000 ft., 14.vi.1934 (*H. E. Hinton*).

Paratypes: Two with the same data as above.

This new species is most closely related to *H. puncticollis* Sharp (figs. 1, 2), but it differs in the punctation of the middle of the pronotal disk which is finer and distinctly sparser, the punctures being separated by about or more than their diameters; also, there are a few fine punctures sparsely intermixed. In *H. puncticollis* Sharp the punctures of the middle of the pronotal disk are



FIGS. 1–4.—(1) Lateral view of male genitalia of *H. puncticollis* Shp. (2) Dorsal view of male genitalia of *H. puncticollis* Shp. (3) Dorsal view of male genitalia of *H. confusus* Hntn. (4) Lateral view of male genitalia of *H. confusus* Hntn.

coarser, more evenly spaced, and usually separated by less than half their diameters. In the male of *H. puncticollis* Sharp there is a group of long, prominent, testaceous hairs in front of the posterior coxae on each side of the metasternum and a similar group on each side of the base of the prosternal process in front of the anterior coxae. These sexual characters are absent in *H. confusus* Hntn. Other differences between the two species may be found by comparison of the male genitalia.

Sosteamorphus gen. n.

Broadly oblong, robust; clothed for the most part with moderately long, usually recumbent hairs. *Head* retractile; eyes very widely separated; antennae as usual in the family with the two basal segments stout and the following pectinate: mandibles with three unequal apical teeth and a fourth poorly developed, blunt, short subapical tooth, prostheca well developed; maxillary palpi four-segmented, basal segment about two-thirds as long as second and a little less than one-half as broad, second segment as broad and twice as long as third, third transverse, about two-thirds as broad as apical segment and about one-fifth as long, apical segment elongate, obovate, acuminate at apex and as long as the combined

length of the three basal segments. *Pronotum* with a median longitudinal impression; without impressed or raised parallel lines; with only a very feeble transverse impression on apical one-fifth. *Elytra* narrower at base than base of prothorax, widened posteriorly; substriate, strial punctures coarse; intervals coarsely tuberculate. Scutellum large, triangular, glabrous. Hind-wings absent. *Prosternal process* moderately short, moderately broad, subparallel between coxae; apex apparently feebly, broadly rounded when viewed in normal position but when prosternum is separated from mesosternum the apex of the prosternal process is acute and moderately produced, this acute process is adapted to a narrow groove on the mesosternum. Middle and hind coxae about equally separated and distinctly more approximate than anterior coxae. Mesosternum very narrow and about twice as long as metasternum; with a deep, longitudinal groove which is broader than mesosternum on each side. No distinct meso-metasternal suture is present; metasternum at middle about half as long as basal abdominal segment. Basal abdominal segment nearly completely divided by hind coxae and about twice as long as second, second slightly shorter than third, third slightly shorter than fourth, fifth nearly as long as the combined length of the first four.

Genotype: *Sosteamorphus verrucatus* sp. n.

This new genus superficially resembles a heavily tuberculate species of *Sostea* Pasc. However, from *Sostea* and all other genera in the DRYOPINAE, except the New Zealand *Protopaunus* Sharp, known to me, *Sosteamorphus* Hntn. may be readily separated by the absence of hind-wings and the extremely shortened metasternum. From *Protopaunus* Sharp it may be separated by the median pronotal impression and tuberculate dorsal surface.

The shortened metasternum and narrowed shoulders are characteristic features of many widely separated groups in the Coleoptera (COLYDIIDAE, TENEBRIONIDAE, SCARABAEIDAE, etc.) having in common no, or much reduced, hind-wings.

Sosteamorphus verrucatus sp. n.

Broadly oblong, robust; dorsal surface (except scutellum) moderately densely clothed with moderately long, usually recumbent, dark-testaceous hairs, apex of each tubercle usually with a slightly stouter, more erect hair; beneath with sides of meso- and metasternum and all of ventral segments more sparsely pubescent. Derm dark rufo-piceous, feebly shining; antennae, mouth-parts and legs paler rufo-piceous. *Head* very broad, narrowest portion between eyes narrower than breadth of prothorax at apical angles in ratio of 28 : 41. Anterior margin of clypeus broadly, feebly arcuate; angle on each side acute, apparently feebly produced due to a deep and sudden incision for reception of antenna. Surface on basal one-third on each side of middle with a large, low tubercle; behind middle of each eye with a feeble carina extending obliquely backwards; surface elsewhere with moderately fine granulations which are slightly coarser than facets of eyes and are sparsely scattered basally and more densely scattered anteriorly near clypeus; finely and rather densely but very indistinctly punctate. *Prothorax* two-thirds as long as broad (40 : 61), broadest at basal one-third; base broader than apex (50 : 41). Apical margin nearly straight; apical angles slightly deflexed, moderately produced forwards, acute; sides arcuate but more strongly arcuate on basal one-half, moderately converging towards apex, lateral margins coarsely and very irregularly crenate; basal angles acute, feebly produced backwards; base broadly, feebly trisinuate, margin in front of scutellum scarcely sinuate, nearly straight. Pronotum with a broad but slight depression in front of scutellum and from anterior margin of this depression a moderately narrow, shallow, median, longitudinal impression is continued to apical margin. Surface moderately coarsely and moderately densely but irregularly tuberculate throughout; also very finely but very irregularly densely, often subrugosely

punctate. *Elytra* more than twice as long as prothorax (90 : 40) and distinctly narrower at base than base of prothorax; broadest slightly before end of basal one-half. Each elytron with nine (including sutural) intervals; at base on third interval is a large, long, prominent tubercle; at sides and towards apex are numerous large, prominent tubercles and irregularly scattered about on tubercles and elsewhere on intervals are moderately coarse granulations. Striae coarse; strial punctures coarse, subquadrate and on disk separated mostly by one to two times their diameters. Scutellum large, flat, glabrous, shining, in the form of a triangle, twice as broad as long (19·5 : 9·5). *Ventral abdominal segments* longitudinally, densely strigose except middle apical portion of last segment which is smooth. Legs short and stout; tarsi short and stout. Length, 3·7–4 mm.; breadth, 1·8–2 mm.

Type: In the collection of the British Museum (Natural History). Chile (*Germain*).

Paratypes: Five with same data as above.

Elminae.

Elsianus immsi sp. n.

(Figs. 5, 6, and 7.)

♂. Elongate, subparallel, moderately convex. Surface microscopically alutaceous throughout; moderately sparsely clothed above with very fine, short, recumbent, testaceous hairs; beneath with the femora, sides of sterna and ventral abdominal segments extremely densely and finely tomentose, elsewhere clothed as above. Derm pale rufo-piceous, subopaque. *Head* with the clypeal suture feebly, broadly arcuate; anterior margin of clypeus very broadly and shallowly, arcuately emarginate, with the angle on each side broadly, obtusely rounded and the side apparently feebly dilated. Surface very finely granulate, the granules being separated for the most part by four to five times their diameters. *Prothorax* broader than long (56 : 45), broadest across basal one-third; base broader than apex (50 : 36·5). Apical margin feebly arcuate, strongly sinuate on each side behind eye; apical angles prominently produced forwards, acute; sides arcuate, converging moderately towards apex, lateral margins finely and irregularly crenate due to fine lateral granules; base trisinuate, broadly and feebly sinuate on each side and narrowly and strongly sinuate in front of scutellum. Pronotum with the sublateral carina feebly sinuate beyond basal one-third and becoming obsolete at apical one-fifth. Surface with a scarcely noticeable indication of a median, longitudinal line; granules on disk about twice as coarse as those of head and separated mostly by three to five times their diameters; sides between sublateral carinae and lateral margins with the granules distinctly coarser and denser. *Elytra* three times as long as prothorax (138 : 45), broader across apical one-third than at base (70 : 52). Intervals nearly flat; disk sparsely and finely granulate. Apices conjointly broadly subtruncate. Scutellum large, subovate, longer than broad (9·8 : 7), flat, obscurely punctate, not microscopically alutaceous, shining. *Beneath* finely and densely granulate to strigo-granulate. Prosternal process as figured (fig. 7). Metasternum flat to feebly depressed; finely impressed, median, longitudinal line complete. First ventral abdominal segment strongly depressed at middle. Hind tibiae with the two apical spurs straight and equal. Length, 4·5 mm.; breadth, 1·7 mm.

♀ unknown.

Type: A male in my collection. Costa Rica: Reventazon, 29.xi.1931 (*F. Nevermann*).

I take pleasure in naming this species after Dr. A. D. Imms of Cambridge University, to whom I am indebted for much assistance.

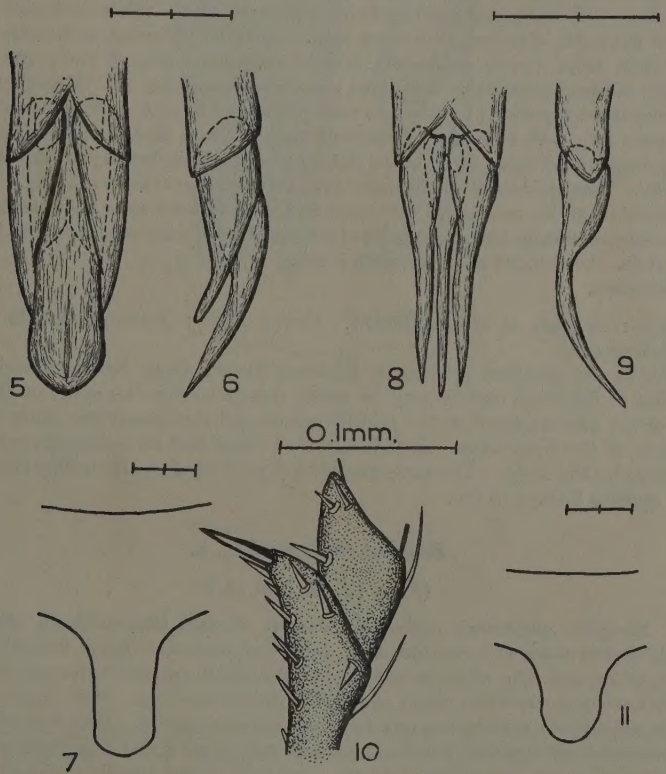
The shape of the scutellum will serve to separate this species from all others

occurring in Mexico or central America. The form of the male genitalia (figs. 5, 6) will immediately separate *E. immsi* Hntn. from all of its congeners.

Elsianus tarsalis sp. n.

(Figs. 8, 9, 10, and 11.)

♂. Elongate, subparallel, moderately convex. Surface microscopically alutaceous; moderately sparsely clothed above with very fine, short, recumbent, testaceous hairs; beneath with the femora, sides of sterna and ventral abdominal segments extremely densely and finely tomentose, elsewhere clothed as above. Derm mostly pale rufo-piceous, sub-



FIGS. 5–11.—(5) Dorsal view of male genitalia of *E. immsi* Hntn. (6) Lateral view of male genitalia of *E. immsi* Hntn. (7) Prosternal process of *E. immsi* Hntn. (8) Dorsal view of male genitalia of *E. tarsalis* Hntn. (9) Lateral view of male genitalia of *E. tarsalis* Hntn. (10) First and second segments of metatarsus of *E. tarsalis* Hntn. (11) Prosternal process of *E. tarsalis* Hntn.

opaque. *Head* with the clypeal suture feebly, broadly arcuate; anterior margin of clypeus truncate, with the angle on each side obtuse, feebly rounded; antennae attaining basal one-fifth of prothorax. Surface very finely granulate, with the granules somewhat irregularly distributed but mostly separated by about five times their diameters. *Prothorax*

nearly as long as broad (32 : 33), broadest across basal one-half; base broader than apex (29 : 25). Apical margin feebly arcuate, strongly sinuate on each side behind eye; apical angles prominently produced forwards, acute; sides feebly arcuate, nowhere perceptibly sinuate, converging feebly towards apex, lateral margins finely and irregularly crenate due to fine lateral granules; base trisinuate, broadly and feebly sinuate on each side and narrowly and slightly more strongly sinuate in front of scutellum. Pronotum with the sublateral carina very feeble, slightly sinuate on basal one-half and becoming obsolete before apical one-fifth. Surface with the granulations on the disk slightly coarser than those of head and separated mostly by four to five times their diameters; sides between sublateral carinae and lateral margins with the granules distinctly coarser and denser. *Elytra* more than twice as long as prothorax (78 : 32), broader across apical one-third than at base (40 : 30). Intervals nearly flat; disk finely and moderately sparsely granulate. Apices conjointly broadly rounded but feebly divergent at extreme apex. Scutellum subovate, moderately convex, longer than broad (5 : 4), moderately densely granulate. *Beneath* finely and densely granulate to strigo-granulate. Prosternal process as figured (fig. 11). Metasternum flat, feebly depressed posteriorly; surface on each side of middle with a subquadrate patch of moderately long, pale-testaceous, recumbent hairs; with a finely impressed, complete, median, longitudinal line. First ventral abdominal segment moderately strongly depressed at middle. First segment of middle tarsus with a strong spine at inner apex (fig. 10); apex of hind tibia with the outer spine very small and straight, inner spine about twice as long and stout as outer spine and strongly flexed inwards so that it is transverse to the long axis of the tibia. Length, 2·8 mm.; breadth, 1 mm.

♀ unknown.

Type: A male in my collection. Costa Rica: Reventazon, 23.vii.1930 (*F. Nevermann*).

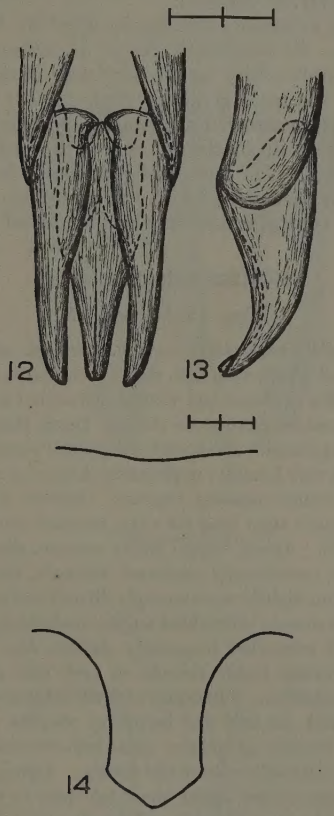
This is the smallest species of *Elsianus* known from North America. In addition to its small size, it may be easily recognised by the spine at the inner apex of the first segment of the middle tarsus and the transverse inner spine at the apex of the hind tibia. It is likely that these last two characters are only possessed by the male. The male genitalia (figs. 8, 9) are quite unlike those of all other species known to me.

Elsianus sandersoni sp. n.

(Figs. 12, 13, and 14.)

♂. Elongate, subparallel, moderately convex. Surface microscopically alutaceous; sparsely clothed above with very fine, short, recumbent, testaceous hairs; beneath with the femora, tibiae, and sides of sterna and ventral abdominal segments extremely finely and densely tomentose, elsewhere nearly glabrous or clothed as above. Derm black to feebly piceous, subopaque; antennae, mouth-parts and legs rufo-piceous. *Head* with the clypeal suture broadly and very feebly arcuate; anterior margin of clypeus very broadly, scarcely perceptibly, arcuately emarginate, with the angle on each side broadly rounded. Surface finely granulate, the granules being separated by two to four times their diameters basally and seldom separated by as much as three times their diameters on clypeus. *Prothorax* broader than long (65 : 53), broadest across basal one-third; base broader than apex (59 : 37). Apical margin feebly arcuate, strongly sinuate on each side behind eye; apical angles prominently produced forwards, acute, but feebly rounded at extreme apex; sides strongly arcuate, scarcely noticeably sinuate before hind angles, converging in anterior two-thirds moderately strongly towards apex, lateral margins finely, somewhat irregularly crenate due to fine lateral granules; base trisinuate, broadly and feebly sinuate on each side and narrowly but not strongly sinuate in front of scutellum. Pronotum with the sublateral

carina rather prominent, feebly sinuate slightly beyond basal one-third and becoming obsolete slightly before apical one-fifth. Surface with the granules but slightly coarser than those of head and separated mostly by three to four times their diameters; sides between sublateral carinae and lateral margins with the granules distinctly coarser and denser. *Elytra* more than twice as long as prothorax (135 : 53), broader across apical one-third than at base (77 : 62), breadth across humeri greater than breadth at base (70 : 62). Intervals



FIGS. 12–14.—(12) Dorsal view of male genitalia of *E. sandersoni* Hntn. (13) Lateral view of male genitalia of *E. sandersoni* Hntn. (14) Prosternal process of *E. sandersoni* Hntn.

flat; disk finely, moderately densely granulate. Apices broadly and conjointly produced, truncate. Scutellum nearly round, slightly longer than broad (9 : 8·8), strongly convex, moderately densely granulate. *Beneath* about as coarsely and densely granulate throughout as sides of pronotum between lateral margins and sublateral carinae. Prosternal process as figured (fig. 14). Metasternum flat, feebly depressed posteriorly; with the finely impressed, median, longitudinal line becoming obsolete at anterior one-fifth. First ventral segment strongly depressed at middle. Tarsal segments (especially of hind tarsi) with elongate tufts of pubescence arising from ventral apices of four basal segments; apex of hind tibia with the

inner spur straight and slightly longer than outer spur, outer spur feebly curved outwards. Length, 3·1–4·3 mm.; breadth, 2 mm.

♀ externally similar to male.

Type: A male in my collection. MEXICO: Dist. de Temascaltepec, Tejupilco, alt. 3,960 ft., —.vii.1933 (*H. E. Hinton, R. L. Usinger*).

Paratypes: One male and five females. MEXICO: Estado de Morelos Cuernavaca, —.vi.1934 (*H. E. Hinton*).

I take great pleasure in naming this species after Mr. M. W. Sanderson of the University of Kansas. *E. sandersoni* Hntn. is externally so similar to *E. striatus* Sharp that the only really satisfactory way of separating the species is by an examination of the male genitalia (figs. 12, 13) which are stouter, the median lobe is less rapidly narrowed near apex, and the latter is nearly as long as the parameres, whereas in *E. striatus* Sharp the median lobe is distinctly longer than the parameres. The new species is usually larger, and the scutellum is rounder, and, in a few specimens which have not been rubbed, there is a long brush of hairs on the ventral apices of the four basal segments of the hind tarsus.

Elsianus striatoides sp. n.

(Figs. 15, 16, and 17.)

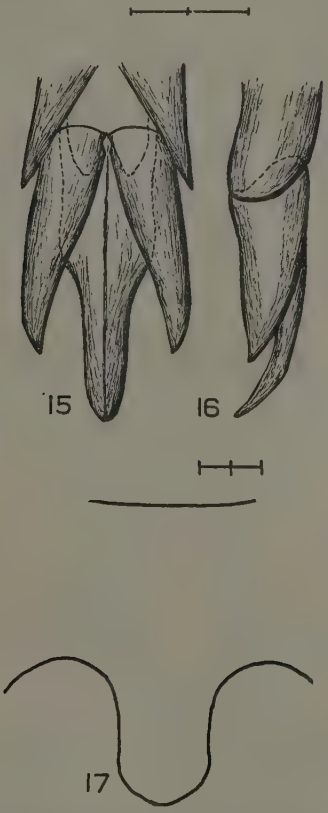
♂. Elongate, subparallel, moderately convex. Surface microscopically alutaceous; moderately sparsely clothed above with fine, short, recumbent, testaceous hairs; beneath with the femora, tibiae, sides of sterna and ventral abdominal segments extremely densely and finely tomentose, elsewhere clothed as above. Derm black, subopaque; antennae, mouth-parts and legs rufo-piceous. *Head* with the clypeal suture broadly, feebly arcuate; anterior margin of clypeus very broadly, moderately shallowly, arcuately emarginate, with the angle on each side obtuse, broadly rounded. Surface finely, moderately densely granulate. *Prothorax* broader than long (59 : 51), broadest across basal one-third; base broader than apex (55 : 37). Apical margin feebly arcuate, strongly sinuate on each side behind eye; apical angles prominently produced forwards, acute but feebly rounded at extreme apex; sides arcuate, slightly more strongly dilated and reflexed than is usual in this genus, feebly but distinctly sinuate before hind angles, moderately converging towards apex, lateral margins finely and somewhat irregularly crenate due to lateral granules; base trisinuate, broadly, moderately feebly sinuate on each side and narrowly, moderately feebly sinuate in front of scutellum. Pronotum with the sublateral carina rather prominent, moderately sinuate at basal one-half and becoming obsolete at about apical one-fifth. Surface finely and rather densely granulate; sides between sublateral carinae and lateral margins with the granules distinctly coarser and denser. *Elytra* more than twice as long as prothorax (130 : 51), broader across apical one-third than at base (75 : 57) and greatest breadth across humeri greater than breadth at base (68 : 57). Intervals nearly flat; disk finely, moderately densely granulate. Apices conjointly broadly subtruncate and only very feebly rounded, at extreme apex feebly divergent. Scutellum nearly round, slightly longer than broad (10·5 : 9), strongly convex and finely, moderately densely granulate. *Beneath* finely and densely granulate. Prosternal process as figured (fig. 17). Metasternum flat, feebly depressed posteriorly, with a finely impressed, median, longitudinal line extending to anterior one-fourth. First ventral abdominal segment strongly depressed at middle. Apex of hind tibia with the inner spur slightly longer than the outer and straight, outer spur apparently very feebly curved outwards; basal four segments of hind tarsus with a slender but long pencil of hairs at the ventral apex of each segment. Length, 4·5 mm.; breadth, 1·9 mm.

♀ unknown.

Type: A male in my collection. Mexico: Dist. de Temascaltepec, Temascaltepec, 28.v.1933, alt. about 5,000 ft. (*H. E. Hinton, R. L. Usinger*).

Paratype: One male collected on —.vi.5, data otherwise the same as above.

For positive determination of this species, recourse must be had to a study of its male genitalia and that of its two most closely related congeners, *E. striatus* Sharp and *E. sandersoni* Hntn. The median lobe in *E. sandersoni* Hntn.



Figs. 15–17.—(15) Dorsal view of male genitalia of *E. striatoides* Hntn. (16) Lateral view of male genitalia of *E. striatoides* Hntn. (17) Prosternal process of *E. striatoides* Hntn.

(fig. 12) is hardly as long as the parameres, whereas in *E. striatoides* Hntn. (fig. 15) it is very much longer. In *E. striatus* Sharp the median lobe is distinctly but not greatly longer than the parameres, whereas in the new species it is very much longer. The slender pencil of long hairs at the ventral apex of the four basal segments of the hind tarsus (in well-preserved specimens) will serve to separate it from *E. striatus* Sharp and its smaller size from *E. sandersoni* Hntn.

Elsianus clypeatus sp. n.

♀. Elongate, subparallel, moderately convex. Surface microscopically alutaceous; moderately sparsely clothed above with fine, short, suberect to recumbent, testaceous hairs; beneath with the femora, tibiae, sides of sterna and sides of ventral abdominal segments minutely, densely tomentose, elsewhere nearly glabrous or clothed as above. Derm rufo-piceous, subopaque; antennae, mouth-parts and tarsi paler rufo-piceous. *Head* with the clypeal suture broadly, moderately feebly arcuate; anterior margin of clypeus moderately strongly bisinuate, with the angle on each side obtuse, rounded, sides near anterior angles apparently very feebly dilated. Surface finely, rather densely but obscurely granulate; granules on clypeus coarser, more distinct and separated mostly by two to three times their diameters. *Prothorax* broader than long (39·5 : 37·6), broadest at about basal one-third; base broader than apex (35 : 29·5). Apical margin moderately arcuate, strongly sinuate on each side behind eye; apical angles very prominently produced forwards, acute; sides but feebly arcuate, nowhere distinctly sinuate, feebly converging towards apex, lateral margins finely and irregularly crenate due to fine lateral granules; basal angles rather inconspicuous; base trisinuate, broadly, moderately sinuate on each side and narrowly, apparently more strongly sinuate in front of scutellum. Pronotum with the sublateral carina rather prominent, feebly sinuate at basal one-third and becoming obsolete slightly before apical one-fifth; a scarcely defined, median, longitudinal line extends from a short distance in front of the scutellum to apical one-third, at middle of disk this line is more evident due to what appears to be simply an absence of the alutaceous microsculpture. Surface finely granulate, with the granules separated mostly by three to four times their diameters. *Elytra* more than twice as long as prothorax (100 : 37·6), broader across apical one-third than at base (49 : 35); greatest breadth across humeri greater than breadth at base (43 : 35). Intervals nearly flat, near base feebly convex; disk with the granules generally about twice as coarse as those of pronotum and separated mostly by two to five times their diameters. Apices conjointly broadly produced for a short distance, then individually obliquely truncate to apex, at extreme apex the elytra are feebly divergent. Scutellum subovate, longer than broad (6·7 : 5), strongly convex, granulate as adjacent portion of elytra; extreme base with a very narrow belt which is neither alutaceous nor granulate. *Beneath* finely granulate to strigo-granulate. Prosternal process moderately broad, obtusely angulate at apex. Metasternum flat, near each posterior corner with a slight depression; with the finely impressed, median, longitudinal line moderately deep and nearly complete. First ventral abdominal segment moderately strongly depressed at middle. Length, 3·05 mm.; breadth, 1·5 mm.

♂ unknown.

Type: A female in the British Museum (Natural History). West Indies: Trinidad, Maracas, 28.v.1924 (*C. L. Withycombe*).

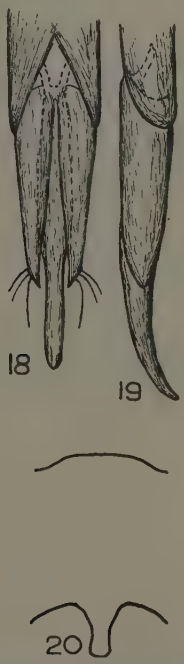
This is the only species of *Elsianus* so far reported from the West Indies. Of the Mexican and central American species, it is only close to *E. tarsalis* Hntn., but is larger, has a moderately strongly bisinuate instead of arcuately emarginate clypeus, and the apex of each elytron is obliquely truncate rather than rounded. *E. clypeatus* Hntn. is very close to an undescribed species from Caracas, Venezuela in my collection.

Stenelmis nevermanni sp. n.

(Pl. 1, fig. 1; figs. 18, 19, and 20.)

♂. Elongate, subparallel, moderately convex. Surface throughout microscopically alutaceous; above with the scutellum glabrous, elsewhere sparsely clothed with very fine, moderately long, recumbent, pale-testaceous hairs, elytra near apex with a few fine, erect hairs which are often about as long as the combined length of the two basal antennal seg-

ments; upper surface in many specimens brownish-cinereous due to a fine deposit of earthy material; beneath clothed throughout with minute, dense tomentum and also clothed as above. Derm pale brownish-piceous, feebly shining. *Head* with the clypeal suture nearly straight; anterior margin of clypeus truncate, with the angle on each side obtusely rounded; antennae long and slender, extending slightly beyond basal prothoracic angles. Surface very finely granulate, with the granules apparently seldom separated by more than five times their diameters. *Prothorax* longer than broad (30 : 26·5), broadest across basal one-third; base broader than apex (25 : 19). Apical margin feebly arcuate, feebly sinuate on each side behind eye; apical angles inconspicuous, when viewed laterally feebly produced forwards, obtusely rounded; sides moderately converging towards apex, feebly, broadly sinuate in



FIGS. 18–20.—(18) Dorsal view of male genitalia of *S. nevermanni* Hntn. (19) Lateral view of male genitalia of *S. nevermanni* Hntn. (20) Prosternal process of male genitalia of *S. nevermanni* Hntn.

apical one-half and feebly, more narrowly sinuate before basal angles, lateral margins indistinct, nearly obsolete, finely crenate due to fine lateral granules; basal margin moderately strongly trisinuate, broadly so on each side and narrowly so in front of scutellum. Pronotum unevenly convex, without definite sublateral carinae; median longitudinal impression feeble, extending from basal one-fourth to apical one-third, deepest at apical one-third. Surface slightly coarsely, densely, often confluently rugosely punctate; with fine granules which are especially anteriorly and at sides separated mostly by two to seven or more times their diameters. *Elytra* more than twice as long as prothorax (68 : 30), broader across apical one-third than at humeri (39 : 35). Intervals nearly flat, alternate discal intervals (1, 3, 5, and 7) slightly paler in colour than others; strial punctures moderately coarse, subquadrate to round and on disk separated mostly by one to five times their

diameters. Apices moderately broadly but somewhat shortly produced, conjointly truncate. Scutellum elongate, subovate, broadly rounded basally, acuminate apically, length to breadth ratio is 6·5 : 3·8, flat, glabrous, shining. *Surface beneath* finely granulate. Prosternal process as figured (fig. 20). Metasternum depressed posteriorly; with the median longitudinal line extending only to anterior one-third. Middle of first ventral abdominal segment not noticeably depressed, granulate similarly to metasternum, sides and other ventral segments much more finely granulate than metasternum. Claws slender, not toothed. Length, 3·6 mm.; breadth, 1 mm.

♀ externally similar to male.

Type: A male in my collection COSTA RICA: Reventazon, 1.xi.1934, at light (*F. Nevermann*).

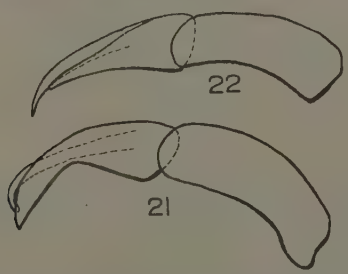
Paratypes: Twelve collected by the same collector at the same locality during the following different times: —.xi.1931, —.ii.1932, —.vii. and —.xi.1934.

Certain specimens appear to have a feebly developed fringe of tomentum on the inner apices of the tibiae, but in all other respects the species is a true *Stenelmis*. It is the only species of this cosmopolitan genus so far recorded from the Mexican or central American region. It is close to none of the North American (U.S.A.) species known to me.

Neoelmis longulus sp. n.

(Pl. 1, fig. 2; fig. 21.)

Moderately elongate, narrow, subparallel, convex; moderately sparsely and unevenly clothed above with fine, short, recumbent, somewhat testaceous hairs; dark rufo-piceous and shining above, beneath paler rufo-piceous; antennae, mouth-parts and tarsi rufo-testaceous. *Head* densely, minutely rugulose; middle of clypeus nearly smooth. Antennae attaining basal one-fifth of prothorax. *Prothorax* scarcely longer than wide; sublateral carina strongly raised, extending to apex and sinuate inwardly on apical two-fifths; lateral



FIGS. 21–22.—(21) Lateral view of male genitalia of *N. longulus* Hntn. (22) Lateral view of male genitalia of *N. apicalis* Sharp.

margins finely crenate; disk in apical two-fifths with a very wide, deep transverse impression extending to lateral margins; surface very finely, sparsely punctate, with sides and bottom of transverse impression finely rugulose; at base on each side of scutellum with a small, round impression, and on each side against inner side of the sublateral carina is a small, round, deep impression. *Elytra* widest at apical one-third; margins finely crenate; apices broadly produced, conjointly rounded; fifth interval with a strongly raised line extending nearly to apex; intervals elsewhere nearly flat; striae feebly impressed on basal two-thirds, obsolete on apical one-third; strial punctures on basal two-thirds extremely

coarse and dense and separated by distinctly less than their own diameters, absent on apical one-third. *Prosternal process* with the margin slightly raised and continued forwards to middle of prosternum; transverse carina between meso- and metasternum moderate. Median channel of metasternum deep and broad. Middle anterior portion of first ventral segment and caudal portion of metasternum broadly depressed; coxal carina of first ventral segment extending posteriorly to apical one-third of segment. Median lobe of male genitalia nearly as long as parameres and curved ventrally near apex. Length, 2·2 mm.; breadth, 0·9 mm.

Type: A male in my collection. MEXICO: Dist. de Temascaltepec, Real de Arriba, alt. 6,000–7,000 ft., vii.1933 (*H. E. Hinton, R. L. Usinger*).

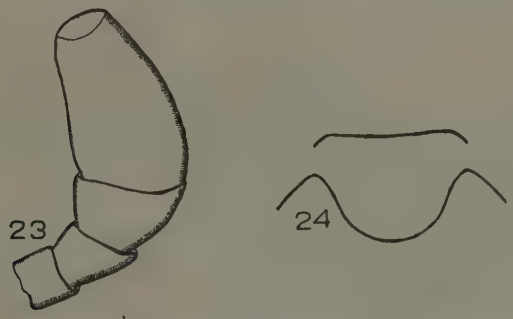
Paratypes: Numerous examples in my collection with same data as above. Also a small series taken at MEXICO: Estado de Morelos, Cuernavaca, vi.1934 (*H. E. Hinton*).

This species can only be related to *N. apicalis* (Sharp) (*Elmis*) but is constantly larger (2·2 mm. instead of 1·8 mm.), and in a long series of both species before me there is no intergradation of size. *N. longulus* Hntn. has the median lobe scarcely as long as the parameres, whereas in *N. apicalis* (Sharp) (fig. 22) the median lobe is distinctly longer than the parameres.

Xenelmis gen. n.

(Pl. 1, fig. 3; figs. 23 and 24.)

Very short, broadly oval; nearly glabrous. *Head* partially retractile; antennae narrowly linear; eleven-segmented; mandibles very blunt at apex, apparently without teeth; maxillary palpi (fig. 23) four-segmented. *Prothorax* moderately produced over head on middle of front; evenly convex; without trace of sublateral carinae; without transverse impression of any sort; without median, longitudinal impression; disk granulate. *Elytra*



FIGS. 23–24.—(23) Maxillary palpus of *X. bufo* Sharp. (24) Prosternal process of *X. bufo* Sharp.

feebly striate, feebly punctate, surface finely granulate throughout; each elytron with two finely granulate, lateral lines extending at least to apical one-third. Scutellum large, broadly oval, broader than long. *Prosternum* very short (fig. 24), rounded behind and without a distinct process. Beneath apparently without tomentum at sides of sterna and ventral abdominal segments. Metasternum with a fine, median longitudinal channel. Legs moderately short; tibiae fringed on inner apices with tomentum.

Genotype: *Xenelmis bufo* (Sharp).

The four-segmented maxillary palpi and pronotum without raised or impressed lines will immediately separate *Xenelmis* Hntn. from all the American genera except *Simsonia* C. and Z., but from the latter the presence of lateral granulated lines on the elytra and the peculiar structure of the prosternum will serve to separate the new genus. From the European *Riolus* Muls., the new genus differs in its broadly oval form and in the structure of the prosternum.

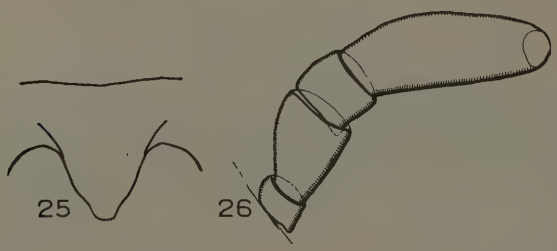
Simsonia Carter and Zeck.

Simsonia Carter and Zeck, 1929, *Austr. Zool.*, **6** : 58.

This genus is represented in North America by the following species : *S. vittata* (Melsh.), *S. bivittata* (Lec.), *S. quadrinotata* (Say), *S. brunnescens* (Fall), and *S. dietrichi* (Musgr.).

The prosternal process and maxillary palpi of *S. brunnescens* (Fall) are figured (figs. 25 and 26). A brief re-characterisation of the genus follows :—

Moderately elongate to elongate. *Head* partially retractile; antennae narrowly linear, eleven-segmented; maxillary palpi four-segmented. *Pronotum* without sublateral carinae; with or without a feeble or moderately strong transverse impression on apical one-half; without a median, longitudinal impression. *Elytra* striate-punctate; without raised



Figs. 25–26.—(25) Prosternal process of *S. brunnescens* (Fall). (26) Maxillary palpus of *S. brunnescens* (Fall).

lateral lines; scutellum subovate. *Beneath* with the sides of the sterna and the sides of the ventral abdominal segments extremely densely and finely tomentose. Prosternal process as figured (fig. 25). Metasternum usually with a longitudinal impressed line. Tibiae fringed with tomentum at their inner apices.

The North American species of this genus bear a great superficial resemblance to those of the genus *Narpus* Casey, but they differ in possessing four-segmented instead of three-segmented maxillary palpi.

Macronychoides Champion.

Macronychoides Champion, 1923, *Ent. mon. Mag.*, **69** : 171.

This genus is represented in central Mexico by a single species, *M. ungulatus* (Hntn.), which is not different enough from the type of the genus to warrant the erection of a new genus. The only other species, the genotype, *M. amnicola* Champ., is recorded from latitude 10° north in southern India at altitudes of 6,700 to 7,000 ft. The Mexican species is found in central Mexico at altitudes of 5,000 to 8,000 ft. at a latitude of 19° north. The conclusion can hardly be avoided that in former times the genus extended northwards to Siberia and across, via the shelf-bridge of the Bering Straits, down the Western Coast of

America to central Mexico. Interestingly enough, cohabiting the same stream, at the 5,000 ft. level, is a species of *Austrolimnius*, *A. formosus* (Sharp), which must have come there by an entirely different route. The genus *Austrolimnius* Carter and Zeck is abundantly represented in both the Australian and Neotropical regions, probably having come from Australia in pre-Eocene times before the separation of the Australian block from Antarctica.

A redescription of the genus *Macronychoides* to include the two species follows :—

Moderately elongate; prothorax narrower than elytra, subparallel; elytra broad, feebly obovate. *Head* partially retractile; antennae narrowly linear, eleven-segmented; mandibles with three short, apical teeth in *ungulatus*, simple (*vide* Champion) in *amnicola*; maxillary palpi four-segmented (*ungulatus*, fig. 29). *Prothorax* with or without feeble sublateral carinae extending from base to apex; with or without a median longitudinal impression; with or without a basal sublateral sulcus; without a transverse impression. *Elytra*

Figs. 27–29.—(27) Prosternal process of *M. ungulatus* (Hntn.). (28) Leg of *M. ungulatus* (Hntn.) showing toothed claws. (29) Maxillary palpus of *M. ungulatus* (Hntn.).

striate-punctate; with or without a moderately strongly raised lateral line extending along seventh interval to apical one-fifth. Scutellum moderately large, subovate. *Beneath* with the sides of the sterna and sides of the ventral abdominal segments extremely finely and densely tomentose. Prosternum long; prosternal process as figured (*ungulatus*, fig. 27). Metasternum with a median longitudinal impression. Legs long; tibiae fringed on inner apices with long tomentum; all claws acutely toothed near basal one-half (*ungulatus*, fig. 28).

The apices of the tibiae were incorrectly stated by Champion to be sparsely pubescent within, but in the type now before me and in the Mexican species there is a strongly developed fringe of tomentum on the inner apices of the tibiae. The adult of *M. ungulatus* (Hntn.) is figured on pl. 1, fig. 4.

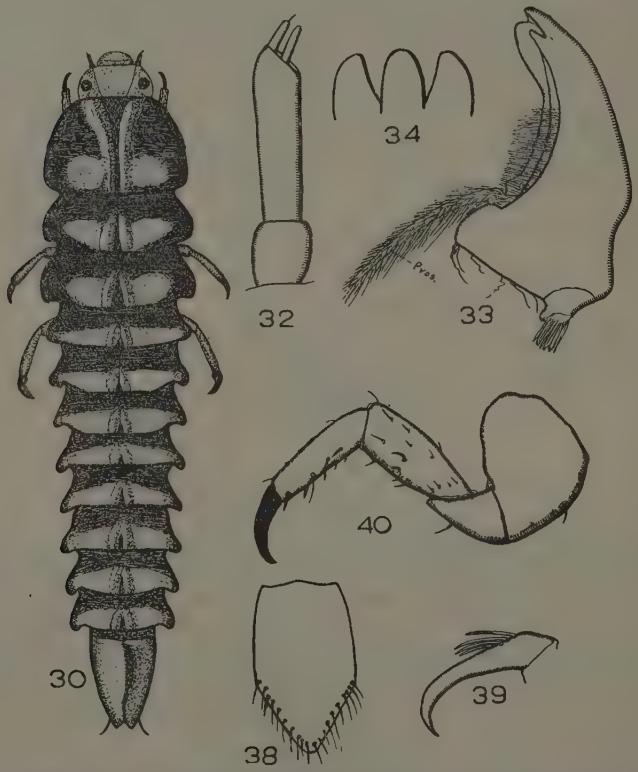
Macronychoides ungulatus (Hntn.).

(Figs. 30 to 40.)

Larva. Before me is a series of twenty larvae determined as this species by elimination and locality. The larvae were taken by myself in June and July,

1934, at Rio Verde, alt. 8,000 ft. and Real de Arriba, alt. 6,000 to 7,000 ft., both in the District of Temascaltepec, State of Mexico, Mexico. All specimens were taken in company with the adults clinging to roots (*Salix* and *Alnus*) in cold, torrential mountain streams. The largest available larva is 5 mm. and the smallest 2 mm. long.

Length, 4 mm. (fig. 30). Body subtriangular in cross-section. Prothorax, meso- and metathorax subequal in breadth; abdominal segments feebly narrowing caudally. More heavily sclerotised parts of body fusco-testaceous; antennae, mouth-parts, legs, appendage of tenth abdominal segment and inter-segmental membranes pale testaceous. Dorsal and



Figs. 30, 32–34, 38–40.—(30) Larva of *M. ungulatus* (Hntn.). (32) Antenna × 550 of larva of the same. (33) Left mandible × 600 of larva. (34) Tip of mandible × 700 of larva. (38) Tenth abdominal segment (sternite) of larva × 135. (39) Appendage of tenth abdominal segment (sternite) of larva × 170. (40) Mesothoracic leg of larva × 140.

ventral sclerotised areas mostly tuberculate, each tubercle (except fine tubercles at anterior margins of segments) with a short seta near apex on posterior side (fig. 31A, × 1,600); also with a few sparsely scattered, extremely fine setae arising independently of tubercles. *Head capsule* abruptly rounded and truncate behind, not constricted to form a neck. Anterior four-fifths of dorsal surface and sides slightly coarsely tuberculate, with the

tubercles separated mostly by about one to three times their own diameters; surface also with sparse, minute, pale areas from which arise setae, on basal one-fifth with three similar but much larger areas on each side and from each arises a single seta. Ventral surface with only the gula obsoletely tuberculate; elsewhere not tuberculate. Frontal sutures very well developed and extending on each side from near the base of the labrum to unite at middle just before posterior margin. Single ocellus on each side in a large pigment spot. Labrum well developed, transverse, with rounded anterior angles. Antennae (right ant. fig. 32,

FIGS. 31*a*, *b*, 35–37.—(31*a*) A dorsal tubercle of larva of *M. ungulatus* (Hntn.) × 1,600. (31*b*) A dorsal marginal tubercle of larva × 1,600. (35) Ventral view of right maxilla of larva × 630. (36) Ventral view of labium of larva × 630. (37) Metathoracic spiracle of larva × 832.

× 550), 0·1 mm. long; two-segmented, cylindrical, glabrous, first segment wider than second in ratio of 14 : 11, second segment nearly three times as long as first (45 : 15) and on the outwardly obliquely truncate apex with two peg-like processes the inner one being slightly shorter, more truncate at apex and bearing a fine, seta-like apical process. Mandibles equal. Left mandible (fig. 33, × 600) 1·5 mm. long and twice as long as wide; with three apical teeth (fig. 34, × 700); with cutting edge simple; prostheca four-sevenths as long as mandible, not branched, densely clothed with extremely fine, long, hair-like cuticular processes;

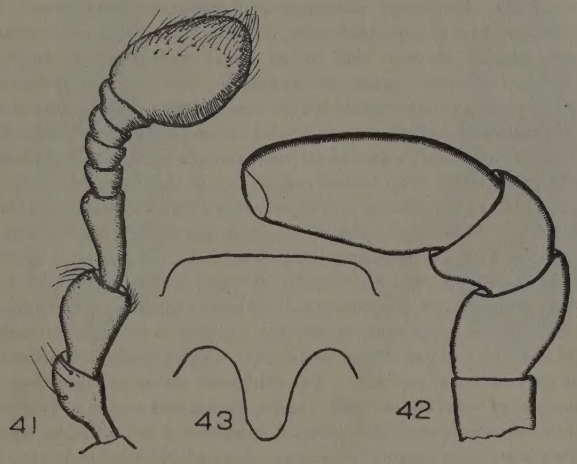
above prostheca there are a number of extremely fine, nearly invisible hair-like processes apparently attached to the inner edge of the mandible. Maxillae (fig. 35, × 630) with the palpus 0·05 mm. long, subcylindrical, four-segmented, segments 1, 2, 3, and 4 in length ratio of 4 : 5, 5 : 12, 12 : 7·5; first three segments subequal in breadth, third narrowed at base and four narrower than apex of third in ratio of 5 : 7. Stipes 0·14 mm. long and 0·06 mm. wide, nearly parallel-sided. Cardo small, triangular. Labium (fig. 36, × 630) with the two-segmented, cylindrical palpus 0·021 mm. long; first segment shorter than second (5 : 7·5) and slightly broader. Prementum 0·02 mm. long, densely pubescent at apex. Postmentum 0·18 mm. long and 0·09 mm. broad, nearly parallel-sided. *Prothorax* about one-third broader than long; narrowed anteriorly; angles rounded; with two prominent, longitudinal ridges parallel near base and from apical one-half diverging moderately towards apex; near base on each side with a rounded, elevated area. Surface slightly coarsely tuberculate, with the tubercles separated mostly by one or two times their diameters; anteriorly with the tubercles slightly finer and denser; anterior and posterior margins with a row of flat, quadrate tubercles (fig. 31B, × 1,600) from each of which arises a multi-branched seta. Mesothorax less than two-thirds broader than long (35 : 15); generally similar to prothorax but with the longitudinal ridges joining in front and not attaining apex; with the hind angles feebly produced; anterior belt of very fine tubercles with the tubercles separated mostly by less than their own diameters. *Metasternum* generally similar to mesosternum. *Dorsal abdominal segments* similar to metasternum but more strongly transverse and gradually narrowing caudally; caudal segments with the hind angles increasingly strongly produced backwards. Eighth abdominal segment with the channel between the ridges very feeble. Ninth dorsal with ratio of breadth to length 15 : 25, triangular, subconical, with a single, median, longitudinal ridge and with the caudal end triangularly emarginate. *Spiracle* of mesothorax (fig. 37, × 832·5) situated laterally on posterior half of segment near posterior angles; projecting caudally; biforous and surrounded by a ridge of heavily sclerotised cuticle. Spiracles of first eight abdominal segments similar to mesothoracic spiracles. *Pleural areas* mostly finely tuberculate as anterior margins of dorsal segments; posterior margins of these also with a row of the flat, subquadrate tubercles. *Beneath* tuberculate as above; with the anterior margin of the prothorax and posterior margin of all other segments except the ninth and tenth with a row of flat, subquadrate tubercles; metathorax with two small median, longitudinal, carina-like tubercles at anterior margin; first ventral segment with a single, similar tubercle at anterior margin. Tenth segment forms the operculum (fig. 38, × 135). Claw-like appendage of tenth segment (fig. 39, × 170) very slender and strongly curved. *Legs* well developed (mesothoracic leg : fig. 40, × 140) and increasing in length and strength posteriorly and each with a single, strong, curved claw.

Zaitzevia Champion.

Zaitzevia **Champion, 1923, *Ent. mon. Mag.*, 69 : 170.**

This genus was erected by Champion for two Indian species, *Z. solidicornis* Champion and *Z. acutangula* Champ., and later (1927) a third species, *Z. crassipes*, was described by him from India. A single species of this genus, *Z. parvulus* (Horn) (*Macronychus*), has been recorded from the coastal region of middle California. This American representative was described in, and until now always referred to the genus *Macronychus* Mull. However, it is abundantly distinct, and it has (contrary to statements by Horn, Bradley, and others) eight-segmented instead of seven-segmented antennae (fig. 41). The maxillary palpi and prosternal process of *Z. parvulus* (Horn) are as figured (figs. 42 and 43). This species seems to be one of the commonest coastal-Californian Elmids. There is a series of well over one hundred specimens in my collection which were

collected mostly in the following localities : Sonora, 13.vi.1931 (*H. E. Hinton*); Berkeley, 28.iv.1934 (*H. E. Hinton*); Mt. Hamilton, v.1934 (*K. D. Sloop*); and



FIGS. 41–43.—(41) Antenna of *Zaitzevia parvulus* (Horn). (42) Maxillary palpus of *Z. parvulus* (Horn). (43) Prosternal process of *Z. parvulus* (Horn).

Knight's Ferry and Oakdale, 16.v.1934 (*H. E. Hinton, J. R. Hogue*). As regards its affinities with its Indian congeners, the remarks made above with regard to *Macronychoides* Champ. apply here equally well.

Macronychus Mull.

Only two species of this genus have been so far described; and of these, one, *M. quadrituberculatus* Mull., is widely distributed in Europe and the other, *M. glabratus* (Say), occurs in the eastern United States. Before me is a third species from the Malay Peninsula. The following key will serve to separate the three species :—

A key to the species of Macronychus.

1. Sublateral elytral carina attaining apex of elytra. Malay Peninsula. *simplex* sp. n.
– Sublateral elytral carina abruptly terminated at apical one-third of elytra . 2.
2. Pronotum with a strong transverse impression on apical one-half; without a basal sublateral carina. Europe . . *quadrituberculatus* Mull. (1806).
– Pronotum without a strong transverse impression on apical one-half; with a sublateral carina on basal one-third. Eastern United States. *glabratus* (Say) (1825).

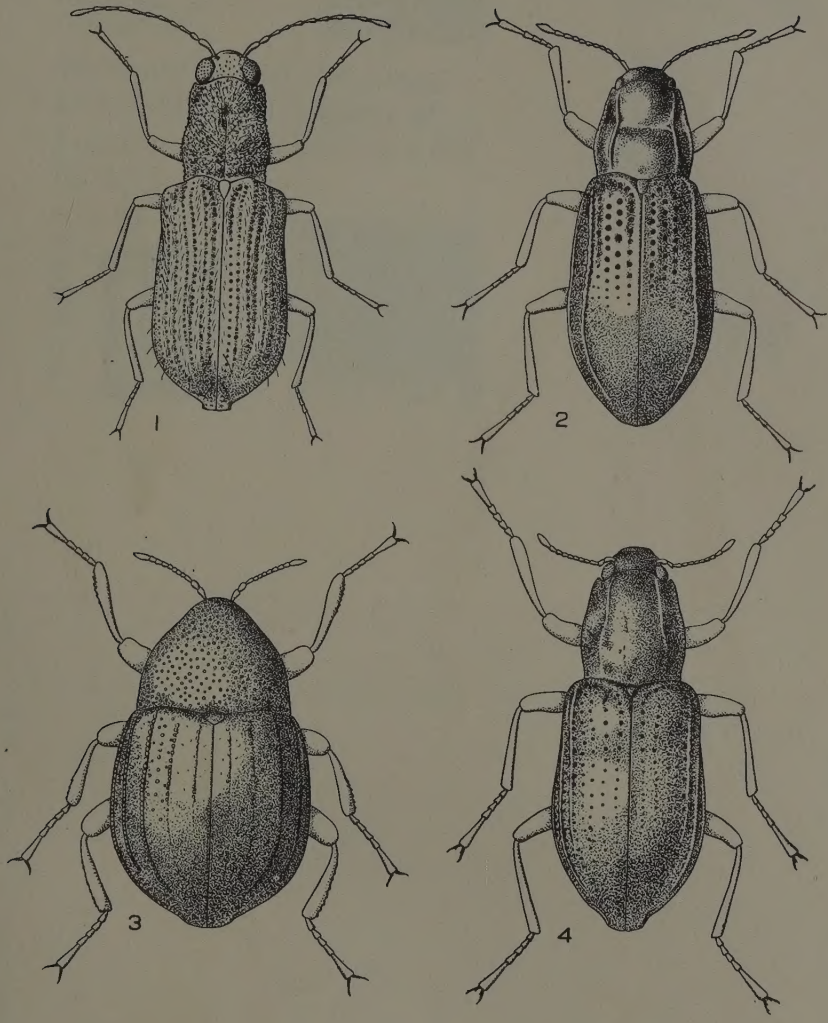
Macronychus simplex sp. n.

Elongate, obovate, convex; most of head, sides of elytra between sublateral carina and lateral margin, epipleura, sides of sterna and sides of four basal abdominal segments, most of apical abdominal segment and femora clothed with a fine, dense tomentum; tibiae, except on inner sides which are densely tomentose, clothed with very fine, moderately sparse, golden-grey pubescence; body elsewhere glabrous. Derm black, shining; antennae, mouth-

parts and tarsi rufo-piceous. *Head* without noticeable impressions; clypeal suture feebly arcuate, nearly straight; anterior margin of clypeus feebly arcuate, with the angle on each side broadly rounded. Surface basally with the punctures fine and separated mostly by three to five times their diameters; punctures on clypeus finer and sparser. *Prothorax* as broad as long (30 : 30), base broader than apex (30 : 19); apical margin moderately strongly arcuate, strongly sinuate on each side before apical angles; apical angles prominent, moderately produced forwards, acute, not rounded; sides arcuate, moderately strongly converging towards apex, feebly sinuate before basal angles; basal angles not prominent, feebly acute, not rounded; base trisinuate, broadly so on each side and narrowly so in front of scutellum. Pronotum evenly convex; on basal one-half on each side at about one-fourth the breadth of the pronotum from lateral margin is a moderately deep puncture which is about a third as broad as scutellum; surface elsewhere with the punctures about as coarse or slightly coarser than those of basal part of head and separated mostly by three to five times their own diameters, with the punctures towards sides usually sparser. *Elytra* more than twice as long as prothorax (65 : 30), broader at basal one-third than at base (40 : 33). Not striate; with a sutural row of punctures about half as coarse as discal pronotal ones and separated by two to four times their diameters; parallel to this row but only present on basal one-third is another row of similar punctures; a third similar row parallel to this last row is present only on basal one-fifth. The sublateral carina extends from near base to apex; on humerus on basal one-seventh a short, granulated carina is interposed between sublateral carina and inner margin of epipleura; on apical one-seventh close to and parallel to sublateral carina is an inner granulated carina. Apex of elytra subtruncate; inner sutural margin of each elytron acutely but moderately produced beyond truncation. *Beneath* very finely and sparsely punctate; prosternal process broadly rounded posteriorly but feebly angulate at middle of apex; metasternum with a fine, complete, longitudinal impression. Length, 2·7 mm.; breadth, 1 mm.

Type: In the British Museum. MALAY PENIN.: Selangor, "in dirty pond," 1.ix.1926 (*C. Dover*).

Besides the characters given in the above key, this species differs from both *M. quadrituberculatus* Mull. and *M. glabratus* (Say) in its smaller size, the possession of a short accessory carina at humerus and one at apex of each elytron, and in not having coarse elytral punctures.



EXPLANATION OF PLATE 1.

FIG. 1. *Stenelmis nevermanni* Hinton.
2. *Neoelmis longulus* Hinton.
3. *Xenelmis bufo* (Sharp).
4. *Macronychoides ungulatus* (Hinton).